This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (previously presented): An information input/output system to be used for user operations relating to an object in an information space realized by expanding a digital space of a computer into the real world, said system comprising:

one or more than one operation surfaces arranged in said information space;

a display means for displaying an image on said operation surfaces;

an imaging means for picking up an image of said operation surfaces;

a stationary environment type computer arranged in said information space; and

one or more than one physical objects mounted on said operation surfaces and containing a visually identifiable visual marker on the surface thereof;

said environment type computer being adapted to execute;

a processing operation of recognizing the identification information and the position information of each of said physical objects in said visual marker;

a processing operation of recognizing the digital object dropped to a site on the surface of each of said physical objects; and

a processing operation of forming link information for linking the digital object to the dropped site on the surface for each of said physical objects.

Claim 2 (original): The information input/output system according to claim 1, wherein at least one of said physical objects is a portable computer capable of being moved in said information space and exchanging digital objects with other computers.

Claim 3 (original): The information input/output system according to claim 1, wherein at least one of said physical objects is a portable computer capable of being moved in said information space and exchanging digital objects with other computers; and

said environment type computer can expand a mouse/cursor operation on the installed portable computer onto said operation surfaces.

Claim 4 (original): The information input/output system according to claim 1, wherein

said imaging means can identify the position indicated by an optical pointer for indicating a specific position by irradiating a beam of light with a predetermined wavelength; and

the user is allowed to indicate a position in said information space by means of coordinates and the optical pointer.

Claim 5 (original): The information input/output system according to claim 1, wherein said environment type computer executes a processing operation of calling the linked digital object and/or displaying the digital object to the user in response to a user operation applied to the site of forming the link information on the surface of each of the physical objects on the basis of the image picked up by said imaging means.

Claim 6 (previously presented): An information input/output system to be used for user operations relating to an object in an information space realized by expanding a digital space of a computer into the real world, said system comprising:

one or more than one operation surfaces arranged in said information space;

a display means for displaying an image on said operation surfaces;

an imaging means for picking up an image of said operation surfaces;

a stationary environment type computer arranged in said information space;

one or more than one physical objects mounted on said operation surfaces and containing a visually identifiable visual marker on the surface thereof; and

a portable ID recognition device adapted to recognize/identify the visual marker on the surface of each of said physical objects.

Claim 7 (previously presented): The information input/output system according to claim 6, wherein

said environment type computer is adapted to execute;

a processing operation of receiving the identification information of the source object and that of the destination object from said ID recognition device; and

a processing operation of applying an action specified on the basis of the combination of the type of the source object and that of the destination object.

Claim 8 (original): The information input/output system according to claim 6, wherein

at least one of said physical objects is a portable computer capable of being moved in said information space and exchanging digital objects with other computers.

Claim 9 (previously presented): An information input/output system to be used for user operations relating to an object in an information space realized by expanding a digital space of a computer into the real world, said system comprising:

one or more than one operation surfaces arranged in said information space;

a display means for displaying an image on said operation surfaces;

an imaging means for picking up an image of said operation surfaces;

a stationary environment type computer arranged in said information space; and

one or more than one physical objects mounted on said operation surfaces and containing a visually identifiable visual marker on the surface thereof;

at least one of said physical objects being a virtual camera having a virtual imaging direction as specified by the position information contained in the visual marker.

Claim 10 (previously presented): The information input/output system according to claim 9, wherein

said environment type computer is adapted to execute;

a processing operation of recognizing/identifying said virtual camera and identifying the position information and the virtual imaging direction;

a processing operation of generating a virtual picked up image according to the position information and the virtual imaging direction; and a processing operation of displaying the virtual picked up image to the user.

Claim 11 (original): The information input/output system according to claim 9, wherein at least one of said physical objects is a portable computer that can move in said information space and exchange digital objects with another computer.

Claim 12 (previously presented): An information input/output system to be used for user operations relating to an object in an information space realized by expanding a digital space of a computer into the real world, said system comprising:

one or more than one operation surfaces arranged in said information space;

a display means for displaying an image on said operation surfaces;

an imaging means for picking up an image of said operation surfaces;

a stationary environment type computer arranged in said information space;

one or more than one physical objects mounted on said operation surfaces and containing a visually identifiable visual marker on the surface thereof; and

an optical pointer adapted to point a specific position by irradiating a beam of light with a predetermined wavelength; said imaging means being capable of identifying the position pointed by said optical pointer.

Claim 13 (original): The information input/output system according to claim 12, wherein said environment type computer executes on the basis of the image picked up by said imaging means;

a processing operation of recognizing the user operation on said operation surfaces, using said optical pointer; and

a processing operation of controlling the display of the digital object by said display means according to the result of the recognition.

Claim 14 (withdrawn): An information input/output system to be used for user operations relating to an object in an information space realized by expanding a digital space of a computer into the real world, said system comprising:

one or more than one operation surfaces arranged in said information space;

a display means for displaying an image on said operation surfaces;

an imaging means for picking up an image of said operation surfaces;

an environment type computer stationarily arranged in said information space; and

one or more than one portable computers capable of exchanging digital objects with other computers;

said portable computers being capable of retrieving a three-dimensional model and/or generating a three-dimensional model thereon;

said environment type computer being adapted to execute;

a processing operation of generating an image to be projected on said operation surfaces on the basis of the information for drawing a three-dimensional model in response to the application of the user operation of taking out the three-dimensional model from one of said portable computers to said operation surfaces, and a processing operation of controlling a display of the projected image generated by said display means.

Claim 15 (previously presented): An information input/output system to be used for user operations relating to an object in an information space realized by expanding a digital space of a computer into the real world, said system comprising:

one or more than one operation surfaces arranged in said information space;

a display means for displaying an image on said operation surfaces;

an imaging means for picking up an image of said operation surfaces;

a stationary environment type computer arranged in said information space;

one or more than one portable computers capable of exchanging digital objects with other computers;

one or more than one physical objects mounted on said operation surfaces and containing a visually identifiable visual marker on the surface thereof; and

a portable ID recognition device adapted to recognize the visual marker on the surface of each of said physical objects and being capable of holding or releasing the recognized identification information.

Claim 16 (original): The information input/output system according to claim 15, wherein said environment type computer executes;

a processing operation of obtaining a digital object corresponding to the held identification information in response to the holding operation of said ID recognition device; and

a processing operation of transferring a digital object corresponding to the held identification information to a nearby physical object in response to the releasing operation of said ID recognition device.

Claim 17 (previously presented): An information input/output system to be used for user operations relating to an object in an information space realized by expanding a digital space of a computer into the real world, said system comprising:

one or more than one operation surfaces arranged in said information space;

a display means for displaying an image on said operation surfaces;

an imaging means for picking up an image of said operation surfaces;

a stationary environment type computer arranged in said information space;

one or more than one portable computers capable of exchanging digital objects with other computers; and

one or more than one physical objects mounted on said operation surfaces and containing a visually identifiable visual marker on the surface thereof;

said environment type computer being adapted to allow mouse/cursor operations on said portable computers to extend to said operation surfaces and display a rubber band as visual feedback according to the area on said operation surfaces as defined by means of said mouse/cursor.

Claim 18 (original): The information input/output system according to claim 17, wherein said environment type computer is adapted to pick up an image of the area defined by the rubber band by means of said imaging means and take the picked up image in said information space as digital object.

Claim 19 (original): The information input/output system according to claim 17, wherein another object can apply a process or a method it possesses to the rubber-banded original digital object in response to an action of said original object of being dropped on said another object.

Claim 20 (original): The information input/output system according to claim 19, wherein said another object is a physical object possessing a process or a method for printing a document.

Claim 21 (original): The information input/output system according to claim 19, wherein said another object is a name card possessing a process or a method for mailing a document to the mail address corresponding to the name on it.

Claim 22 (previously presented): An information input/output system to be used for user operations relating to an object in an information space realized by expanding a digital space of a computer into the real world, said information space having one or more than one operation surfaces arranged in said information space, a display means for displaying an image on said operation surfaces, an imaging means for picking up an image of said operation surfaces, a stationary environment type computer in said information space and one or more than one physical objects mounted on said operation surfaces and containing a visually identifiable visual marker on the surface thereof, said system comprising:

a step of firstly recognizing the identification information and the position information of each of said physical objects from the visual marker;

a step of secondly recognizing the digital object dropped to a site on the surface of each of said physical objects; and

a step of forming link information for linking the digital object to the dropped site on the surface for each of said physical objects.

Claim 23 (original): The information input/output system according to claim 22, wherein

at least one of said physical objects is a portable computer capable of being moved in said information space and exchanging digital objects with other computers; and

said environment type computer can expand a mouse/cursor operation on the installed portable computer onto said operation surfaces in said second recognition step.

Claim 24 (original): The information input/output system according to claim 22, wherein said imaging means can identify the position indicated by an optical pointer for indicating a specific position by irradiating a beam of light with a predetermined wavelength; and

the user is allowed to indicate a position in said information space by means of coordinates and the optical pointer.

Claim 25 (original): The information input/output system according to claim 22, further comprising:

a step of calling the linked digital object and/or displaying the digital object to the user in response to a user operation applied to the site of forming the link information on the surface of each of the physical objects.

Claim 26 (previously presented): An information input/output system to be used for user operations relating to an object in an information space realized by expanding a digital space of a computer into the real world, said system having one or more than one operation surfaces arranged in said information space, a display means for displaying an image on said operation surfaces, an imaging means for picking up an image of said operation surfaces, a stationary environment type computer arranged in said information space, one or more than one physical objects mounted on said operation surfaces and containing a visually identifiable visual marker on the surface thereof and a portable ID recognition device adapted to recognize/identify the visual marker on the surface of each of said physical objects, said system comprising:

a step of receiving the identification information of the source object and that of the destination object from said ID recognition device; and

a step of applying an action specified on the basis of the combination of the type of the source object and that of the destination object.

Claim 27 (previously presented): An information input/output system to be used for user operations relating to an object in an information space realized by expanding a digital space of a computer into the real world, said system having one or more than one operation surfaces arranged in said information space, a display means for displaying an image on said operation surfaces, an imaging means for picking up an image of said operation surfaces, a stationary environment type computer in said information space and one or more than one physical objects mounted on said operation surfaces and containing a visually identifiable visual marker on the surface thereof, at least one of said physical objects being a virtual camera having a virtual imaging direction as specified by the position information contained in the visual marker, said system comprising:

a step of recognizing/identifying said virtual camera and identifying the position information and the virtual imaging direction;

a step of generating a virtual picked up image according to the position information and the virtual imaging direction; and a step of displaying the virtual picked up image to the user.

Claim 28 (previously presented): An information input/output system to be used for user operations relating to an object in an information space realized by expanding a digital space of a computer into the real world, said system having one or more than one operation surfaces arranged in said information space, a display means for displaying an image on said operation surfaces, an imaging means for picking up an image of said operation surfaces, a stationary environment type computer arranged in said information space, one or more than one physical objects mounted on said operation surfaces and containing a visually identifiable visual marker on the surface thereof and an optical pointer adapted to point a specific position by irradiating a beam of light with a predetermined wavelength, said imaging means being capable of identifying the position pointed by said optical pointer, said system comprising:

a step of recognizing the user operation on said operation surfaces, using said optical pointer; and

a step of controlling the display of the digital object by said display means according to the result of the recognition.

Claim 29 (withdrawn): An information input/output system to be used for user operations relating to an object in an information space realized by expanding a digital space of a computer into the real world, said system having one or more than one operation surfaces arranged in said information space, a display means for displaying an image on said operation surfaces, an imaging means for picking up an image of said operation surfaces, an environment type computer stationarily arranged in said information space and one or more than one portable computers capable of exchanging digital objects with other computers, said portable computers being capable of retrieving a three-dimensional model and/or generating a three-dimensional model thereon, said system comprising:

a step of generating an image to be projected on said operation surfaces on the basis of the information for drawing a three-dimensional model in response to the application of the user operation of taking out the three-dimensional model from one of said portable computers to said operation surfaces; and

a step of controlling the display of said generated and projected image of said display means.

Claim 30 (previously presented): An information input/output system to be used for user operations relating to an object in an information space realized by expanding a digital space of a computer into the real world, said system having one or more than one operation surfaces arranged in said information space, a display means for displaying an image on said operation surfaces, an imaging means for picking up an image of said operation surfaces, a stationary environment type computer arranged in said information space and one or more than one portable computers capable of exchanging digital objects with other computers, one or more than one physical objects mounted on said operation surfaces and containing a visually identifiable visual marker on the surface thereof and a portable ID recognition device adapted to recognize the visual marker on the surface of each of said physical objects and being capable of holding or releasing the recognized identification information, said system comprising:

a step of obtaining a digital object corresponding to the held identification information in response to the holding operation of said ID recognition device; and

a step of transferring a digital object corresponding to the held identification information to a nearby physical object in response to the releasing operation of said ID recognition device.

Claim 31 (previously presented): An information input/output system to be used for user operations relating to an object in an information space realized by expanding a digital space of a computer into the real world, said system having one or more than one operation surfaces arranged in said information space, a display means for displaying an image on said operation surfaces, an imaging means for picking up an image of said operation surfaces, a stationary environment type computer arranged in said information space, one or more than one portable computers capable of exchanging digital objects with other computers and one or more than one physical objects mounted on said operation surfaces and containing a visually identifiable visual marker on the surface thereof, said system comprising:

a step of allowing mouse/cursor operations on said portable computers to extend to said operation surfaces; and

a step of displaying a rubber band as visual feedback according to the scope on said operation surfaces as defined by means of said mouse/cursor.

Claim 32 (original): The information input/output system according to claim 31, further comprising:

a step of picking up an image of the scope defined by the rubber band by means of said imaging means and taking the picked up image in said information space as digital object.

Claim 33 (original): The information input/output system according to claim 31, further comprising:

a step of applying a process or a method possessed by said another object to the rubber-banded original digital object in response to an action of said original object of being dropped on said another object.

Claim 34 (original): The information input/output system according to claim 33, wherein said another object is a physical object possessing a process or a method for printing a document.

Claim 35 (original): The information input/output system according to claim 33, wherein said another object is name card possessing a process or a method for mailing a document to the mail address corresponding to the name on it.